is removed in one procedure. The after care is simple, but necessitates constant observation against bridging.

In more extensive fistulae the step-by-step method of removal is necessary. The procedure in these cases is always carried out from without toward the internal opening. Taking for illustration a case with the external opening two to three inches from the anal verge, or where there is more than one opening and the internal opening has been definitely located, the procedure is as follows: An insulated probe is inserted into the external and directed toward the internal opening. A small wire electrode is thrown over the probe at the skin or distal end and drawn inward as the current is turned on, cutting the tissues from without inward along the probe. In this manner the covering and lateral walls of the fistula are removed up to a selected point. The posterior wall, if cicatrized, is then peeled off with the loop, and the incision packed. In this way one to one and a half inches of the fistulous tract is removed. After a week or ten days this procedure is again repeated and the external opening brought closer to the anal margin. This is repeated as necessity requires until the external opening is brought close to the anal margin. With this accomplished the last step is carried out as described in the operation for a short fistula or crypt operation.

During the period through which this is carried out the patient is never confined for more than a few days, these being the days on which the several operations were performed. This is also economically advantageous to the patient.

According to my experience cures have been obtained in one hundred per cent of all fistula cases. This, of course, depends upon the surgical acumen of the operator and his success in finding and excising the internal opening. With the technic described, the surgeon can take all the time needed to accomplish this purpose.

Pilonidal cysts are excised in mass, as one would remove any area of tissue. There is no special technic required, but one should resect all scar tissue from the side walls and floor. Being sure that only healthy tissue lines the cavity. The wound must then be tightly packed, so that healing occurs from the bottom and recurrence through bridging of the skin is prevented.

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PROCTOLOGIC ELECTROSURGERY *

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The possibilities and advantages of electrosurgery have been apparent to me since 1931 when I began the development of electrosurgical procedures for the various pathologic processes in proctology. Five years of experience leaves no doubt in my mind as to their value.

It is the purpose of this communication to convey by description the application of the high frequency cutting current in this special field. In every case to be presented the operation was performed under local analgesia, the choice of which is left to the individual surgeon. My own technic for profound analgesia of the entire rectal area is submitted for consideration. I feel that in all rectal cases requiring operation it is sound practice to anesthetize the entire rectal area and divulse the sphincters, thereby removing every possibility of discomfort even if unexpected complications are encountered. I likewise believe that divulsion is more beneficial than is commonly believed. The technic I employ requires that the patient is placed on the table in the left lateral position with the knees drawn up. A suitable lamp at the foot of the operating table affords the best means of illumination. A point midway between the anus and the coccyx is selected as the first point of entry. This area can be sprayed with ethyl chloride or touched with phenol, subsequently neutralized with alcohol, to eliminate the pain of the first needle puncture. With this accomplished a few drops of the analgesic are installed into the tissues. For this initial instillation a preparation known as Novocol, H. P. is used, which is followed by benzocaine oil solution, (Benzocaine 3.0, Benzyl Alcohol 10.0, Phenol 1.0, Olive Oil 86.00). From this initial point of entry the solution is gradually instilled upward and outward to the left median line of the anus, deep into the tissues, and parallel to the rectal wall. The right side is next treated in a similar manner, endeavoring with each movement to spread the solution fanwise into both posterior and lateral quadrants. The most anterior anesthetized point is located on the left side and instilled from there upward parallel to the rectal wall and also anterior to the median raphe. The right side is treated in the same manner. The anterior middle line which is more or less difficult to anesthetize is then entered and the solution spread upward and backward on both sides, just as was done at the start in the posterior midline. Four points of entry were thus made, each about one-half to three-fourths of an inch away from the anal aperture. For this procedure use is made of a one and one-fourth inch 22 gauge needle through which about 4 or 5 cc. are injected both posteriorly and anteriorly. This analgesia not only affords profound anesthesia during operation but for seven to twelve days, thus preventing post-operative pain and discom-

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fort. It is through the development of these newer oil analgesics that much of rectal surgery has become an office procedure.

About five minutes should elapse before one is able to operate without causing discomfort. The insertion of one finger into the rectum without distress is an indication that one may proceed. The injected fluid should be gently massaged with one finger inside of the rectum and with the fingers of the other hand from without in order to equally distribute the fluid around the rectal wall. Manual or instrumental divulsion may now be performed.

For operation with the cutting current an inactive electrode of block tin about one square foot is placed under the left hip. A foot switch is essential and should be within convenient reach.

The active (cutting) electrode should be locked in the insulating handle. The apparatus is tested and the spark gap adjusted. With these few very simple but important details accomplished, one is ready to operate.

It may not be amiss to point out that with a reliable apparatus neither the patient nor the surgeon's hand can sustain a shock, since the high frequency current is concentrated close to the tip of the operating electrode, to say nothing of the well-known law that with high frequency currents neuromuscular contractions do not take place. Slight burns are possible by improper contact with the electrodes — inactive as well as active. Even if the active electrode should touch a metal speculum, for example, no harm will ensue.

So far as the cutting technic proper is concerned one must acquire by practice on suitable material (raw meat) properly controlling the current, so that incisions proceed neither too rapidly nor too slowly. The proper guiding of the active electrode is something that cannot be adequately described.

The precaution should be taken never to wear an electric headlight when operating with any electrical modality. There may be, and usually is, a grounding of the house current from which one can experience a bad shock or even death. For the same reason one should not use an electrically illuminated speculum.

Affections Amenable to Electrosurgery

Removal of one or more skin tabs, often erroneously referred to as external hemorrhoids can be accomplished at one sitting after divulsion. If one tab is to be removed, only the tissues directly under it need be anesthetized. The tab is then lifted by means of a clamp or forceps and held slightly taut while being severed. This is accomplished with a straight wire electrode. The tip of the electrode is placed lightly against the skin at the required point of amputation and by intermittent cuts is carried around the tab until it is completely removed. Bleeding is controlled by touching with the ball electrode.

Verrucae acuminatae are removed by means of a wire loop electrode. The loop is placed at one end of the area to be removed, the current turned on and the loop drawn across the growth. Small shot-like verrucae are removed by coagulation with the ball electrode.

For the removal of the *mucosal covering of crypts and buried fissures* we have in the cutting current an exceedingly valuable agent. The accepted surgical technic for this operation is to insert a crypt hook, lift the tissues tent-like and cut them off flush with the basal mucosa. Shreds and overlapping tissue are then trimmed. The base is touched with some form of escharotic and the wound packed with a wick of gauze. The after care of these wounds is tedious and painful. In many cases bridging occurs, which necessitates pulling the wound apart in order to granulate the base. The excision of these crypts and also fissures is greatly simplified by using the following electrosurgical technic. An insulated hook, which I designed a few years ago, is inserted into the crypt or buried fissure and a small wire loop electrode slipped over it at its distal end. This wire is then at the internal opening of the crypt or fissure. The current is turned on and the loop drawn from within outward along the hook, which acts as a guide. In passing it severs all tissue with which it comes in contact and at the same time leaves a thin film of coagulation along the resultant tract. Thus in its cutting it not only removes the mucosal covering of the crypt or fissure, but also controls bleeding and by the superficial coagulation prevents the wounds from bridging. This is desirable, because less attention is needed during convalescence. The fact that these wounds are a trifle slower in healing is an advantage rather than a disadvantage. Shreds that remain at the edges of wounds are removed with the straight wire electrode.

Although the analgesia which has been described is sufficient to control all postoperative pain, another advantage of this current is that it causes an additional desensitization, through coagulation of the exposed tissue. Trauma to the surrounding tissue is minimized. All this clearly shows the superiority of this technic over the older procedures.

Polypi are simply amputated. After complete analgesia and divulsion, the polyp is exposed through a bivalve speculum, lifted up and amputated at its base either by a loop or straight wire electrode. Hemorrhage is easily controlled by coagulation, or if necessary by ligature. For excision of fistulous tracts the cutting current has proved of especially high value. Classic surgery with its trauma and extensive tissue resection cannot possibly compare with the advantages as offered by electrosurgery. Patients suffering from a fistula do not have to be hospitalized for weeks and subjected to extensive radical surgery, followed by a painful and stormy convalesence, to say nothing of the possibility of recurrence. Electrosurgically these tracts are excised in the office without subsequent protracted confinement. Even if the fistulae are multiple or extensive their excision is ultimately accomplished by the step-by-step method. True, it may be that this requires a much longer period of time for accomplishment, but the end results are comparatively more positive and gratifying.

The aim of operative intervention for fistula is to locate and close the internal opening. At times this is simple, but more often very difficult. If the fistula tract is short and does not extend too far from the anal margin it may be excised at one sitting. This is done by inserting a bone probe into the external opening and allowing it to protrude into the lumen of the rectum. A loop electrode is thrown over the distal end, the current turned on and the loop drawn outward. This removes the entire fistula tract en masse, transfixed so to speak, on the probe. The size of the loop should be as small as possible so that no extra tissue, especially that traversing the sphincters, is excised. The entire tract, as can be readily seen,